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HOLLIES AT THE NATIONAL ARBORETUM

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FEB
1993

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HOLLIES AT THE NATIONAL ARBORETUM

The hollies with their bright red fruits and glossy leaves add a cheery note to the fall and winter landscape at the National Arboretum. They are one of the most important and useful groups of broadleaf evergreens used for landscaping in the Eastern United States.

The holly collections at the Arboretum—one of the world's largest—were assembled to increase our knowledge of these horticulturally important plants and to educate the gardening public as to the merits of the various kinds.

The plantings on public display (indicated on the map) are labeled to help visitors identify the various species of hollies. These plantings also suggest possible landscape uses for hollies. In addition to the plantings on display, the Arboretum has research collections of hollies, which are being used in a breeding program to develop superior forms, particularly for sections of the country where hollies are not now climatically adapted. The research collections are also used to test new introductions from other sources.

BOTANICAL DESCRIPTION AND DISTRIBUTION

The holly belongs to the genus *Ilex*. It is the only horticulturally important member of the Holly family (Araliaceae).

Holly flowers are of two kinds—male and female. The two kinds of flowers are borne on separate plants; thus, hollies are said to be dioecious. Female trees produce berries after their flowers receive pollen transferred from the male flowers by bees. Male trees do not produce berries. If flowering takes place at the same time, pollen from male plants can fertilize plants of some different but closely related holly species.

Hollies may produce berries that are red, yellow, or black, the color depending on the species and cultivar¹ of the plant. The leaves may be spiny or spineless. The plants may be evergreen or deciduous.

Hollies are found on all continents. More than 450 species have been described. Nineteen species are native to eastern and southern North America; approximately 50 species are in cultivation in this country.

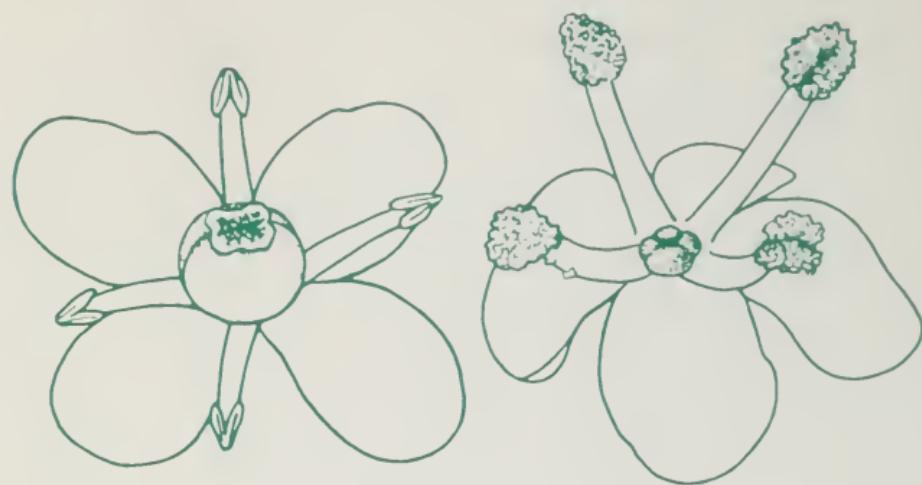
KINDS OF HOLLY

Hollies of the garden may be roughly classified into six principal groups:

● **AMERICAN HOLLY.** Though a number of hollies are native to the Eastern United States, the name "American holly" usually refers to *Ilex opaca*. American holly is typically a broadly pyramidal tree with dull, olive-green, spiny leaves and red berries. There are also spineless-leaved and yellow-fruited types.

● **ENGLISH HOLLY.** *Ilex aquifolium* and hybrids between this species and the Canary Island holly *Ilex perado*, constitute the group known as English hollies. The most outstanding characteristics of this group are the glossy foliage and the number of cultivars having variegated leaves. Both yellow- and red-fruited cultivars are available. The Oregon hollies of the Christmas trade belong in this group.

¹The term "cultivar" denotes an assemblage of cultivated plants originating from a single selection or clone, and is used to retain distinction from a botanical "variety" which is a different category. A "cultivar" is the same as a cultivated variety which in the past was often confused with botanical variety.



Holly flowers: Left, female; right, male.

• **CHINESE HOLLY.** A number of holly species native to China are in cultivation, but this group name commonly refers to *Ilex cornuta*. This species typically has glossy foliage, large red berries, and very stoutly spined leaves; however, it is best known by its spineless-leaved cultivar: 'Bufordii'

• **JAPANESE HOLLY.** The Japanese hollies (*Ilex crenata*) are the most widely grown of all hollies in the United States. Because of their small spineless leaves, resembling those of boxwood, and their black fruit, they are not recognized by most people as being hollies. There are a wide variety of shapes and sizes for landscape use available in the nursery trade. The dwarf cultivar *Ilex crenata* 'Helleri' is widely grown.

• **MISCELLANEOUS EVERGREEN HOLLIES.** Among the most readily available miscellaneous evergreen hollies are *Ilex glabra*, the native black-fruited Inkberry, which is the hardiest of all evergreen hollies; two species from China, *Ilex pedunculosa* with soft, spineless, leathery leaves, and red fruits suspended on long stalks, and *Ilex pernyi*, a slow-growing species with small, pointed, spiny leaves, and red fruit.

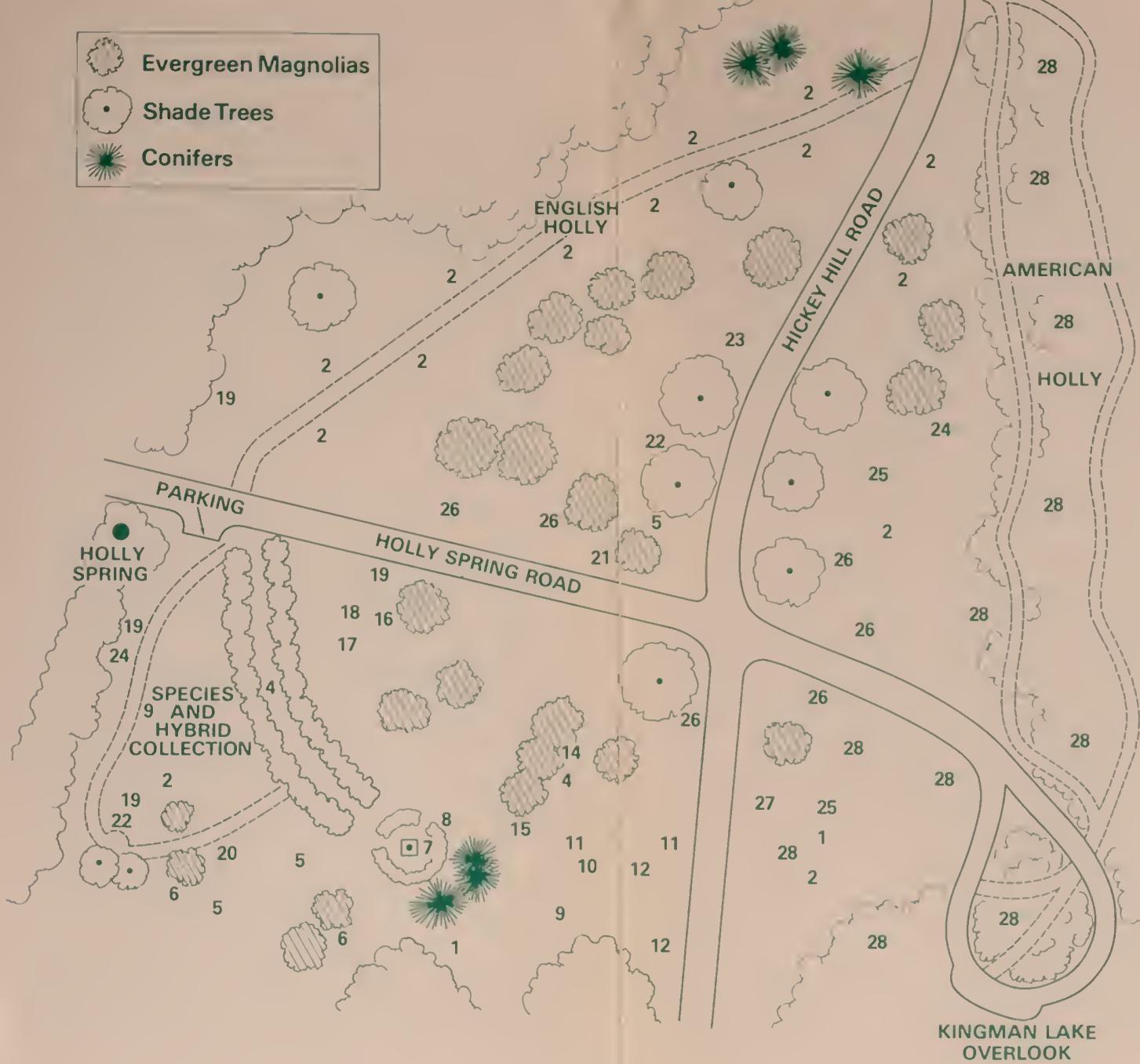
Among currently popular interspecific hybrid hollies are *Ilex* X *aqüipernyi* 'Aquipern', a hybrid of *Ilex aquifolium* with *Ilex pernyi*. The cultivar *Ilex* X *attenuata* 'Foster #2' is a hybrid of *Ilex cassine* with *Ilex opaca*. The crossing of *Ilex aquifolium* with *Ilex cornuta* has produced the cultivar 'Nellie R. Stevens'. The cultivar 'Lydia Morris' is the result of the crossing of *Ilex cornuta* with *Ilex pernyi*.

• **DECIDUOUS HOLLIES.** Several kinds of non-evergreen deciduous hollies are growing in the Arboretum. *Ilex verticillata* (also called Black Alder) is the most common deciduous holly available from nurseries. Though it is a native plant of swamplands, it will adapt itself to garden conditions and produce an abundance of red berries that are plump and firm at Christmas time. Its Asiatic counterpart, *Ilex serrata*, is usually covered with masses of small red berries in early autumn. Another native deciduous holly is *Ilex decidua* known as the Possum Haw. It grows to a large shrub or small tree and produces an abundance of long-lasting red berries. Most deciduous hollies are hardier and easier to cultivate than the evergreen hollies.

WHY HOLLIES FAIL TO FRUIT

Most hollies must be pollinated before they will set an effective display of berries. Some hollies, through a process known as parthenocarpy, will produce berries without being pollinated. *Ilex cornuta* and its cultivar 'Burfordii', however, are the only hollies common to our gardens that will set an effective display of berries by this process. If your holly plants do not set berries, the reason may be that—

- The plant is male. Male and female flowers are borne on separate plants and male plants do not form berries.
- The plant is too young to flower. Seedling hollies do not flower freely until they are 4 to 10 years old.
- A male plant of the same species is not close enough for effective pollination. Bees can bring pollen from male plants that are up to two miles away. But, the shorter the distance between male and female plants, the better are the chances for effective pollen transfer and heavy fruit set. A male plant of the same species as the female makes the most reliable pollinator.
- Cold weather at flowering time reduces activity of bees, thus reducing chances for pollination. In addition, cold weather may kill the female flowers.
- Old plants can fall into a pattern of alternate year fruiting. After a year of extremely heavy fruiting, especially on old plants, flower buds are sometimes not produced for the following season.



NUMBERED LOCATIONS FOR ITEMS OF SPECIAL INTEREST

1 <i>Magnolia macrophylla</i>	10 <i>Magnolia virginiana</i>	20 <i>Ilex crenata</i> 'Contorta'
2 <i>Ilex aquifolium</i>	11 <i>Ilex serrata</i>	21 <i>Ilex integra</i>
3 Twin Oaks Overlook	12 <i>Ilex verticillata</i>	22 <i>Ilex latifolia</i>
4 Avenue of <i>Magnolia 'Verbanica'</i> and <i>Magnolia denudata</i>	13 <i>Magnolia</i> × <i>soulangeana</i>	23 <i>Ilex aquifolium</i> 'Argentea Variegata'
5 <i>Ilex pedunculosa</i>	14 <i>Ilex decidua</i>	24 Hybrid hollies
6 <i>Magnolia grandiflora</i>	15 <i>Magnolia 'Freeman'</i>	25 <i>Ilex chinensis</i>
7 Hexagonal Leakwood Bench	16 <i>Ilex crenata</i> 'Helleri'	26 <i>Ilex crenata</i>
8 Hedge of <i>Ilex cornuta</i> 'Rotunda'	17 <i>Magnolia denudata</i>	27 <i>Ilex vomitoria</i>
9 <i>Ilex</i> × <i>altissimae</i> 'Camelliaefolia'	18 <i>Magnolia kobus</i> var. <i>borealis</i>	28 <i>Ilex apica</i>
	19 <i>Magnolia stellata</i>	

CULTURAL SUGGESTIONS

The cultural needs of hollies are not great. A planting site with well-drained soil and protection from strong winds is best. A liberal quantity of organic matter added to the soil at planting time usually assures the plants a good start. The addition of a 2- to 3-inch mulch applied annually under the spread of the branches is very beneficial. Keeping plants well watered the first growing season after planting aids in their establishment. Watering of established plants during hot, dry spells in summer is also beneficial.

Need for fertilizer can best be determined from the annual amount of growth on new shoots. If the side twigs of dwarf varieties grow 1 to 2 inches, and the side twigs of vigorous tree types grow 8 to 10 inches, the plants need no fertilizer. If growth is less than this, apply a fertilizer especially formulated for acid-loving broad-leaf evergreens. Usually a single application per year is sufficient. Apply the fertilizer in early March at the rates recommended by the manufacturer.

A yearly pruning at Christmas time is usually enough to control the shape of individual plants. Hollies used as hedges will need more frequent pruning.